UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/628,049	07/27/00	DISTEFANO T	THESSERA 3.0

EXAMINER	
GRAYBILL, D	
ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 08/30/01

000530 MM91/0830
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD NJ 07090

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/628,049	Applicant(s) DISTEFANO, THOMAS H.
	Examiner David E Graybill	Art Unit 2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, the scope of the term "constrainment" is unclear because, although the term is known, the term does not appear to be Standard English, it has no art recognized standard meaning, it does not appear to be otherwise defined in the disclosure, and one of ordinary skill in the art, in view of the prior art and the status of the art, would not otherwise be reasonably apprised of the scope of the term.

In claim 9 there is insufficient literal antecedent basis for the term "said contacts."

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Degani (5473512) and Distefano (5834339).

At column 3, line 39 to column 4, line 22; column 4, lines 52-67; column 5, line 42 to column 6, line 14; column 6, lines 41-44; and column 7, last line to column 8, line 23, Degani teaches the following:

1. A method of making a semiconductor chip assembly comprising the steps of:

(a) providing a dielectric element 200 having top and bottom surfaces and terminals 223 on said bottom surface;

(b) supporting semiconductor chip 300 having a front surface with contacts 301, 302 thereon, a rear surface and edges extending between said front and rear surfaces above said top surface of said dielectric element by means of a plurality of posts 253, 254 extending between said rear surface of the chip and the top surface of the dielectric element; then

(c) applying a first curable encapsulant 304 so that said first encapsulant penetrates between said rear surface and said top surface and penetrates between said posts; then

(d) curing said first encapsulant to form a flexible rear encapsulant;

(e) connecting said contacts to said terminals by connecting flexible leads 311, 312 between said contacts on said front surface and electrically conductive elements 262, 266 on said dielectric element; and

(f) providing a flexible lead encapsulant 400 around said chip and said flexible leads.

2. A method as in 1 wherein said step of providing a flexible lead encapsulant includes the steps of applying a second liquid of different composition from said first encapsulant and curing said second liquid.

3. A method as in 2 wherein said step of applying said second liquid is performed after said step of curing said first liquid encapsulant.

To further clarify the teaching of a flexible rear encapsulant, all materials are capable of being flexed; hence, flexibility is an inherent property of the rear encapsulant.

However, Degani does not appear to explicitly teach a first liquid. Nonetheless, Degani teaches that the first encapsulant is an epoxy that has been cured by heating, and, at column 7, line 63 to column 9, line 28, Distefano teaches applying a first curable liquid epoxy encapsulant 230 so that the first liquid

encapsulant penetrates between a rear surface and a top surface and penetrates between posts; then, curing the first liquid encapsulant to form a flexible rear encapsulant. Moreover, it would have been obvious to use the epoxy of Distefano as the epoxy of Degani because it would provide an epoxy.

Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Distefano (5834339) and Degani (5473512).

At column 6, line 3 to column 10, line 61; and column 14, lines 39-46, Distefano teaches the following:

4. A method of making a semiconductor chip assembly comprising the steps of:

(a) providing a dielectric element 225 having top and bottom surfaces and terminals 210 on said bottom surface;

(b) supporting a semiconductor chip 200 having a front surface, a rear surface and edges extending between said front and rear surfaces above said top surface of said dielectric element by means of a plurality of posts 250 extending between said rear surface of the chip and the top surface of the dielectric element; then

(c) connecting contacts 270 to said terminals by connecting flexible leads 260 between said contacts and electrically conductive elements 210 on said dielectric element; and

(d) applying a first curable liquid 230 so that said first liquid penetrates between said rear surface and said top surface and penetrates between said posts, and so that said first liquid surrounds said flexible leads; then

(e) curing said liquid to form a flexible rear encapsulant between the rear surface of the chip and the dielectric element and to form a flexible lead encapsulant integral with said rear around said chip and said flexible leads.

5. A method as in 1 wherein said step of applying said first liquid includes the steps of placing said first liquid on said top surface of said dielectric element at edges of said chip and applying a gas under pressure around the chip and dielectric element to thereby force said first liquid into the spaces between said posts.

6. A method as in 5 wherein said gas pressure is maintained during said step of curing said first liquid.

7. A method as in 4 wherein said step of applying said first liquid includes the steps of

placing said first liquid on said top surface of said dielectric element at edges of said chip and applying a gas under pressure around the chip and dielectric element to thereby force said first liquid into the spaces between said posts.

8. A method as in 7 wherein said gas pressure is maintained during said step of curing said first liquid.

However, Distefano does not appear to explicitly teach that the chip contacts are on the front surface. Nevertheless, as cited supra, Degani teaches a chip having contacts on the front surface. Furthermore, it would have been obvious to combine the process of Degani with the process of Distefano because it would provide a chip with contacts.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda (5157478).

At column 3, lines 38-53; and column 5, lines 19-43, Ueda teaches the following:

9. A method of enhancing the reliability of electrical connections in a semiconductor package during operation of the chip, comprising the steps of:

(a) providing a semiconductor chip 2 having a front contact 21 bearing surface and a rear surface;

(b) providing flexible leads 7 extending from said contacts on said front surface of said chip, said flexible leads being connected to said contacts at joints on said front surface;

(c) juxtaposing a spreader 23 above said front surface, said spreader having a coefficient of thermal expansion substantially equal to the coefficient of thermal expansion of said chip; and

(d) disposing a liquid encapsulant 10 between said front surface and said spreader and around said leads and curing said encapsulant, whereby the motion of the leads during thermal cycling leads is constrained.

10. The method as in 9, further comprising the step of providing a predetermined geometry for the cured encapsulant so as to affect the constrainment of the leads.

It is further noted that it is inherent in the process of Ueda that the geometry of the cured encapsulant is predetermined and that it affects the constrainment of the leads.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist whose telephone number is 703-308-1782.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/305-3431.

David E. Graybill
Primary Examiner
Art Unit 2814

D.G.
28-Aug-01